



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/866,926 | 05/30/2001 | Volker Hilarius | MERCK-2264 | 5145 |

23599 7590 03/27/2006

MILLEN, WHITE, ZELANO & BRANIGAN, P.C.
2200 CLARENDON BLVD.
SUITE 1400
ARLINGTON, VA 22201

EXAMINER

ANDERSON, REBECCA L

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

1626

DATE MAILED: 03/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/866,926

Applicant(s)

HILARIUS ET AL.

Examiner

Rebecca L. Anderson

Art Unit

1626

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claims 1-22 are currently pending in the instant application and are rejected.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 27 December 2005 has been entered.

Election/Restrictions

Applicants' election with traverse of Group I and the species of Example 1 on page 16 in the reply filed on 10 March 2003 was acknowledged in a previous Office Action. The requirement was deemed proper and made FINAL in a previous Office Action.

On 24 October 2005, a Petition to the Commissioner under 37 CFR 1.181 requesting withdrawal of the requirement for restriction of February 10, 2003 was filed.

On 20 January 2006, the Petition Decision granting the withdrawal of the restriction requirement was mailed. The Decision states that the restriction requirement is withdrawn and an examination of all the claims will be made.

Therefore, the entire scope of claims 1-22 has been examined.

The objection to claims 1-10, 15, 18, 19 and 21 as containing non-elected subject matter is therefore withdrawn.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 18, 19 and 22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically, claims 18, 19 and 22 limit the variable A- to a bis[oxalate]borate (claim 18) a bis[salicylato]borate (claim 19) or a bis [1,2-benzenediolato-O,O']borate while leaving the scope of K⁺ as found in claim 1. The only instances of A- as a bis[oxalate]borate, a bis[salicylato]borate or a bis [1,2-benzenediolato-O,O']borate are in specific examples of compounds of the formula (I) with a specific imidazolium, 1-ethyl-3-methylimidazolium. These specific exemplary compounds only provide support for themselves and not an amendment or new claim to a broad genus which encompasses other combinations and compounds wherein K⁺ is other than 1-ethyl-3-methylimidazolium, which do not find support in the original disclosure. The claims therefore fail to comply with the written description requirement as there is not adequate description in the specification to convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention which includes any K⁺ with the specific values of A- as a bis[oxalate]borate, a bis[salicylato]borate or a bis [1,2-benzenediolato-O,O']borate.

Art Unit: 1626

There are no examples found in the originally filed application with the specific A- values as a bis[oxalate]borate, a bis[salicylato]borate or a bis [1,2-benzenediolato-O,O']borate with any K+ except 1-ethyl-3-methylimidazolium, nor are there any examples to any K+ with any other values of A- besides as a bis[oxalate]borate, a bis[salicylato]borate or a bis [1,2-benzenediolato-O,O']borate. Applicant is therefore also excluding that which was not specifically included, such as other values of A- besides as a bis[oxalate]borate, a bis[salicylato]borate or a bis [1,2-benzenediolato-O,O']borate. It is suggested that applicant cancel these claims.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 15 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, claim 15 is directed to a process of making formula (I), however, the reactants of K+CL- and Li+A- contain variables K+ and A- that are not defined in the claim and therefore render the claim indefinite. It is suggested that applicant amend claim 15 to include the definitions of K+ and A- or state that they are defined as in claim 1.

Claims 1-22 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, it would appear that claim 1 and dependent claims 2-16 should read "a compound" instead of "an ionic liquid" of the formula (I) or of claim 1. See the preambles of dependent claims 17-22 which refer to the "compound"

Art Unit: 1626

of claim 1 or 16. Claims 17-22 recite the limitation "A compound" in the dependency reference to claim 1 or 16. However, claim 1 and 16 are directed to "An ionic liquid" instead of "A compound". There is insufficient antecedent basis for this limitation in the claim. It is suggested that applicant amend the claims to refer to "a compound" in all instances of referral to the formula (I).

Claims 16, 17 and 22 are rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, claims 16, 17 and 22 recite the limitation of bis[1,2-benzenediolato-O,O']borate in the anion A-, however, there is insufficient antecedent basis for this limitation in the claim as when one or more pairs of R7 to R10 form an aromatic ring, phenylene, it must be monosubstituted or polysubstituted in claim 1, not unsubstituted.

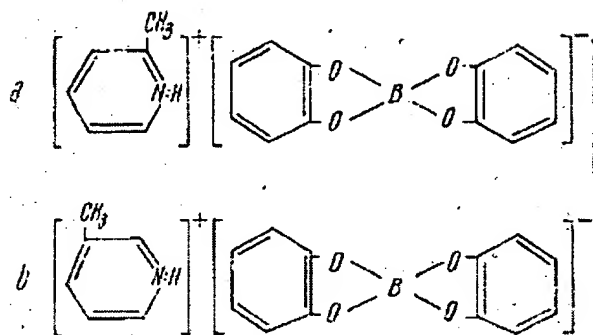
Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

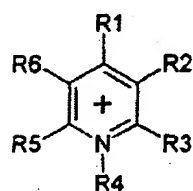
Claim 22 is rejected under 35 U.S.C. 102(b) as being anticipated by Cismaru et al.

Cismaru et al. discloses the compounds a and b on page 533:

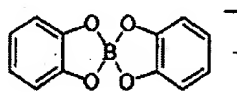
Art Unit: 1626



which correspond to applicants instant invention wherein K⁺ is a cation



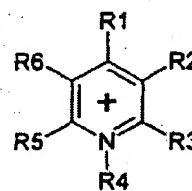
and A⁻ is an anion of



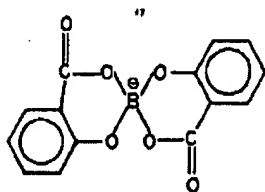
Claims 1, 2 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Basset et al.

Basset et al. discloses the compounds as found in table 1, page 988 wherein the cation is pyridinium or 2-methyl pyridinium and the anion is borodisalicylate which

corresponds to applicants instant invention wherein K⁺ is



and A⁻ is



Basset et al. also discloses the compounds as found in table

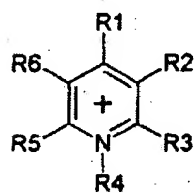
2, page 988 which have a substituted borodisalicylate such as: Py and DMBDS

Art Unit: 1626

(pyridinium and 4,4'-dimethylborodisalicylate); and Py and TIBDS (pyridinium and 3,3',5,5'-tetra-isopropylborodisalicylate).

Claims 1 and 18 are rejected under 35 USC 102(b) as being anticipated by Bessler et al.

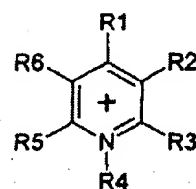
Bessler et al. discloses on page 1021 the compound $AHB(C_2O_4)_2$ wherein A is pyridine, which corresponds to applicants instant invention wherein K^+ is



and A- is bis[oxalate]borate.

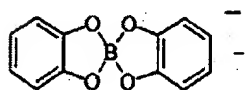
Claim 22 is rejected under 35 USC 102(b) as being anticipated by Grachek et al.

Grachek et al. discloses the compounds of No. III and IV (page 117), see Reg No. 108339-52-2 and 108339-53-3, which are useful as antibacterial agents and



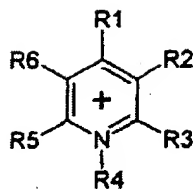
correspond to applicants instant invention wherein K^+ is

and A- is



Claims 1 and 6 are rejected under 35 USC 102(b) as being anticipated by JP 04311735 which discloses the compound of Reg. No. 147390-98-5 which corresponds

Art Unit: 1626



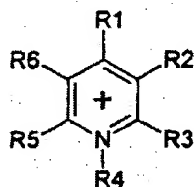
to applicants instant invention wherein K⁺ is

and A⁻ is

[B(OR₇)_n(OR₈)_m(OR₉)_o(OR₁₀)_p]⁻ wherein at least one pair of R₇ to R₁₀ of the anion is an alkylene radical.

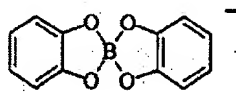
Claim 22 is rejected under 35 USC 102(b) as being anticipated by Clegg et al.

Clegg et al. discloses the compounds of (1), (2) and (3) on page 1875 wherein the cation L is 2-methylpyridinium (1) or 4-methylpyridinium (2) and (3) and the anion is bis(pyrocatecholato-O,O')borate which corresponds to applicants' instant invention



wherein K⁺ is

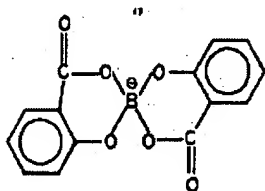
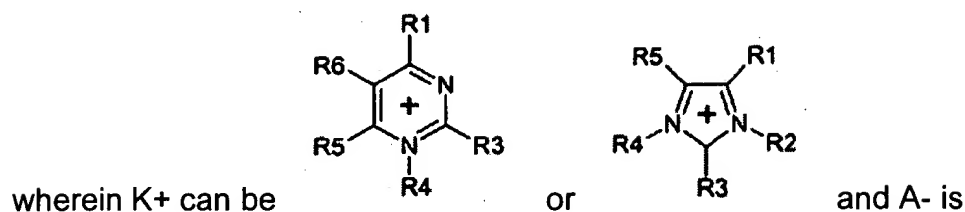
and A⁻ is



Claims 1, 2, 11-14 and 19 are rejected under 35 USC 102(b) as being anticipated by JP 11067604. (English translation is included with Office Action)

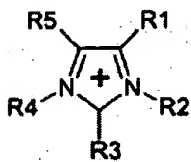
JP 11067604 discloses a borodisalicylic acid amine salt comprised of a borodisalicylic acid skeleton according to formula I and an amine compound skeleton of the formulas II (2) and (3) (page (2)). JP 11067604 also discloses an electrolytic solution with gamma-butyrolactone as a solvent and an electrolytic capacitor, see claims 1 and 2. The formulas II are, for example, (2) a dimethylimidazolium (Reg No. 221332-52-1, example 4, page (4)) and (3) a dimethylpyrimidinum (Reg No. 221332-56-5, example 5, page (4)) (page (3)) which correspond to applicants instant invention

Art Unit: 1626

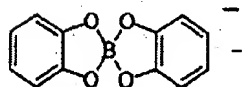


Claim 22 is rejected under 35 USC 102(b) as being anticipated by JP 11171981.

JP 11171981 discloses the onium borate compounds of the formula (5) as found on page 6 which corresponds to applicants' instant invention wherein K⁺ is

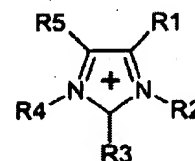


wherein R₂ and R₄ are tBu and R₃ is phenyl and wherein A⁻ is



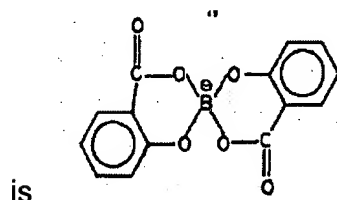
Claims 1-3 and 19 are rejected under 35 USC 102(b) as being anticipated by JP 11209583.

JP 11209583 discloses the onium borate compounds of the formula (5) and (6)



which correspond to applicants' instant invention wherein K⁺ is

and A-



is

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

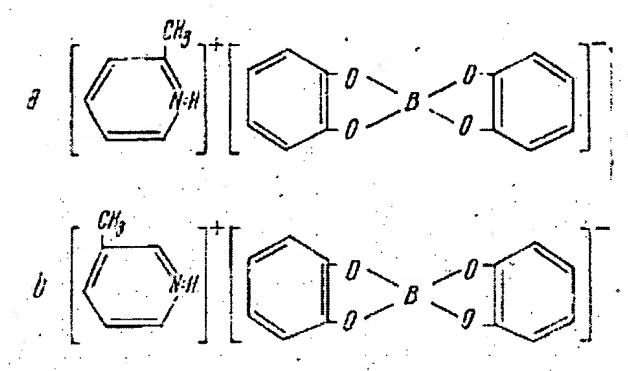
Art Unit: 1626

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

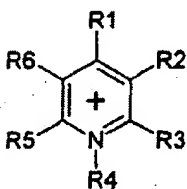
Claims 1, 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cismaru et al.

Determining the scope and contents of the prior art

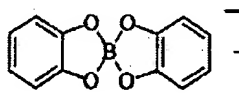
Cismaru et al. discloses the compounds a and b on page 533:



which correspond to applicants instant invention wherein K⁺ is a cation



and A⁻ is an anion of



. These compounds show

bactericidal activity, see page 535.

Ascertaining the differences between the prior art and the claims at issue

The difference between the prior art and the claims at issue is that the aromatic ring, phenylene, formed by one or more pairs of R7 to R10 is unsubstituted, not

Art Unit: 1626

monosubstituted or polysubstituted by $C_nF_{(2n+1-x)}H_x$ or halogen as found in the claims.

Resolving the level of ordinary skill in the pertinent art

However, minus a showing of unobvious results, it would have been obvious to one of ordinary skill in the art, when faced with the prior art of Cismaru et al. to prepare compounds of applicants' instant formula $K+A-$, wherein R1 to R6 are an alkyl radical or the ring formed by R7 to R10 is substituted with $C_nF_{(2n+1-x)}H_x$ (an alkyl radical) as the prior art discloses compounds which differ only by having a hydrogen in these positions instead of an alkyl group. The motivation would be to prepare additional compounds useful as bactericidal compounds. Furthermore, It is well established that the substitution of methyl for hydrogen on a known compound is not a patentable modification absent unexpected or unobvious results. In re Wood, 199 U.S.P.Q. 137 (C.C.P.A. 1978) and In re Lohr, 137 U.S.P.Q. 548, 549 (C.C.P.A. 1963). The motivation to make the claimed compounds derives from the expectation that structurally similar compounds would possess similar activity (ie., bactericidal activity) To those skilled in chemical art, one homologue is not such an advance over adjacent member of series as requires invention because chemists knowing properties of one member of series would in general know what to expect in adjacent members. In re Henze, 85 USPQ 261 (1950). The instant claimed compounds would have been obvious because one skilled in the art would have been motivated to prepare homologs of the compounds taught in the reference with the expectation of obtaining compounds which could be used as

Art Unit: 1626

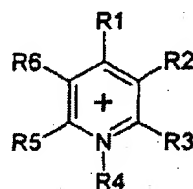
antibacterial agents. Therefore, the instant claimed compounds would have been suggested to one skilled in the art.

Claims 1, 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grachek et al.

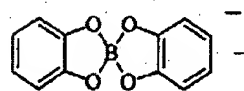
Determining the scope and contents of the prior art

Grachek et al. discloses the compounds of No. III and IV (page 117), see Reg No.

108339-52-2 and 108339-53-3, which are useful as antibacterial agents and correspond



to applicants instant invention wherein K⁺ is and A⁻ is



. The antibacterial activity of the compound is disclosed in table 1, page 117.

Ascertaining the differences between the prior art and the claims at issue

The difference between the prior art and the claims at issue is that the aromatic ring, phenylene, formed by one or more pairs of R7 to R10 is unsubstituted, not monosubstituted or polysubstituted by C_nF_(2n+1-x)H_x or halogen as found in the claims.

Resolving the level of ordinary skill in the pertinent art

However, minus a showing of unobvious results, it would have been obvious to one of ordinary skill in the art, when faced with the prior art of Grachek et al. to prepare compounds of applicants' instant formula K⁺A⁻, wherein R1 to R6 are an alkyl radical or

Art Unit: 1626

the ring formed by R7 to R10 or OR7 to OR10 is substituted with $C_nF_{(2n+1-x)}H_x$ (an alkyl radical) as the prior art discloses compounds which differ only by having a Hydrogen in these positions instead of an alkyl group. The motivation would be to prepare additional compounds useful as antibacterial agents. Furthermore, It is well established that the substitution of methyl for hydrogen on a known compound is not a patentable modification absent unexpected or unobvious results. In re Wood, 199 U.S.P.Q. 137 (C.C.P.A. 1978) and In re Lohr, 137 U.S.P.Q. 548, 549 (C.C.P.A. 1963). The motivation to make the claimed compounds derives from the expectation that structurally similar compounds would possess similar activity (ie., antibacterial activity). To those skilled in chemical art, one homologue is not such an advance over adjacent member of series as requires invention because chemists knowing properties of one member of series would in general know what to expect in adjacent members. In re Henze, 85 USPQ 261 (1950). The instant claimed compounds would have been obvious because one skilled in the art would have been motivated to prepare homologs of the compounds taught in the reference with the expectation of obtaining compounds which could be used as antibacterial agents. Therefore, the instant claimed compounds would have been suggested to one skilled in the art.

Conclusion

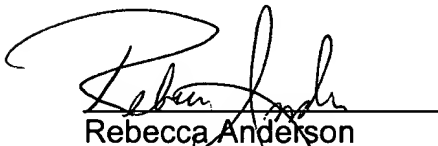
Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Rebecca L. Anderson whose telephone number is (571) 272-0696. Mrs. Anderson can normally be reached Monday through Friday 5:30AM to 2:00PM.

Art Unit: 1626

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Mr. Joseph K. McKane, can be reached at (571) 272-0699.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rebecca Anderson
Patent Examiner
Art Unit 1626, Group 1620
Technology Center 1600

March 17, 2006